

# SEQUENCE LISTING

<110> Yunn-Bor Yang  
Chia-Li Wei  
Jyh-Shing Hsu  
Ying-Chieh Tsai

<120> Mutated Penicillin Expandase and Process for Preparing 7-ADCA Using  
the Same

<130> 6653-017-999

<140> To Be Assigned

<141> 2002-03-26

<160> 1

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1230

<212> DNA

<213> Streptomyces clavuligerus

<220>

<221> CDS

<222> (232) ... (1164)

<400> 1

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gcggacgcgc	tggacgcgct	gacggggcgag	tgatcccccc	ggctcgcgga	ccgcctcccc	180
cgcgctgttg	accaccoggt	tcacggatta	cgagaggatc	agtgagagtt	g atg gac	237
					Met Asp	
					1	
acg acg gtg	ccc acc ttc	agc ctg gcc	gaa ctc cag	cag ggc ctg	cac	285
Thr Thr Val	Pro Thr Phe	Ser Leu Ala	Glu Leu Gln	Gln Gly Leu	His	
	5	10		15		
cag gac gag	ttc cgc agg	tgt ctg agg	gac aag ggc	ctc ttc tat	ctg	333
Gln Asp Glu	Phe Arg Arg	Cys Leu Arg	Asp Lys Gly	Leu Phe Tyr	Leu	
	20	25	30			
acg gac tgc	ggt ctg acc	gac acc gag	ctg aag tcg	gcc aag gac	atc	381
Thr Asp Cys	Gly Leu Thr	Asp Thr Glu	Leu Lys Ser	Ala Lys Asp	Ile	
	35	40	45	50		
gtc atc gac	ttc ttc gag	cac ggc agc	gag gcg gag	aag cgc gcc	gtc	429
Val Ile Asp	Phe Phe Glu	His Gly Ser	Glu Ala Glu	Lys Arg Ala	Val	
	55	60	65			
acc tcg ccc	gtc ccc acc	atg cgc cgc	ggc ttc acc	ggg ctg gag	tcg	477
Thr Ser Pro	Val Pro Thr	Met Arg Arg	Gly Phe Thr	Gly Leu Glu	Ser	
	70	75	80			
gag agc acc	gcc cag atc	acc aat acc	ggc agc tac	tcc gac tac	tcg	525
Glu Ser Thr	Ala Gln Ile	Thr Asn Thr	Gly Ser Tyr	Ser Asp Tyr	Ser	
	85	90	95			

atg tgc tac tcg atg ggc acc gcg gac aac ctc ttc ccg tcc ggt gac	573
Met Cys Tyr Ser Met Gly Thr Ala Asp Asn Leu Phe Pro Ser Gly Asp	
100 105 110	
ttc gag cgg atc tgg acc cag tac ttc gac cgc cag tac acc gcc tcc	621
Phe Glu Arg Ile Trp Thr Gln Tyr Phe Asp Arg Gln Tyr Thr Ala Ser	
115 120 125 130	
cgc gcg gtc gcc cgg gag gtc ctg cgg gcg acc ggg acc gag ccc gac	669
Arg Ala Val Ala Arg Glu Val Leu Arg Ala Thr Gly Thr Glu Pro Asp	
135 140 145	
ggc ggg gtc gag gcc ttc ctc gac tgc gag ccg ctg ctg cgg ttc cgc	717
Gly Gly Val Glu Ala Phe Leu Asp Cys Glu Pro Leu Leu Arg Phe Arg	
150 155 160	
tac ttc ccg cag gtc ccc gag cac cgc agc gcc gag gag cag ccc ctg	765
Tyr Phe Pro Gln Val Pro Glu His Arg Ser Ala Glu Glu Gln Pro Leu	
165 170 175	
cgg atg gcg ccg cac tac gac ctg tcg atg gtc acc ctc atc cag cag	813
Arg Met Ala Pro His Tyr Asp Leu Ser Met Val Thr Leu Ile Gln Gln	
180 185 190	
aca ccc tgc gcc aac ggc ttc gtc agc ctc cag gcc gag gtc ggc ggc	861
Thr Pro Cys Ala Asn Gly Phe Val Ser Leu Gln Ala Glu Val Gly Gly	
195 200 205 210	
gcg ttc acg gac ctg ccc tac cgt ccg gac gcc gtc ctc gtc ttc tgc	909
Ala Phe Thr Asp Leu Pro Tyr Arg Pro Asp Ala Val Leu Val Phe Cys	
215 220 225	
ggc gcc atc gcg acc ctg gtg acc ggc ggc cag gtc aag gcc ccc cgg	957
Gly Ala Ile Ala Thr Leu Val Thr Gly Gly Gln Val Lys Ala Pro Arg	
230 235 240	
cac cat gtc gcg gcc ccc cgc agg gac cag ata gcg ggc agc agc cgc	1005
His His Val Ala Ala Pro Arg Arg Asp Gln Ile Ala Gly Ser Ser Arg	
245 250 255	
acc tcc agt gtg ttc ttc ctc cgt ccc aac gcg gac ttc acc ttc tcc	1053
Thr Ser Ser Val Phe Phe Leu Arg Pro Asn Ala Asp Phe Thr Phe Ser	
260 265 270	
gtc ccg ctg gcg cgc gag tgc ggc ttc gat gtc agc ctg gac ggc gag	1101
Val Pro Leu Ala Arg Glu Cys Gly Phe Asp Val Ser Leu Asp Gly Glu	
275 280 285 290	
acc gcc acg ttc cag gat tgg atc ggg ggc aac tac gtg aac atc cgc	1149
Thr Ala Thr Phe Gln Asp Trp Ile Gly Gly Asn Tyr Val Asn Ile Arg	
295 300 305	
cgc aca tcc aag gca tagagagcac acaccgtcat ggtcacagca gcaatcagtg	1204
Arg Thr Ser Lys Ala	
310	
gtaccgacga gatacgcgcg agggcg	1230